

REMARKS

Applicant amends claim 1, 8 and 14. Also, Applicant adds claims 31-34 and cancels claims 12, 13, 26, 27 and 29. Accordingly, claims 1-11, 14-25, 28 and 30-34 are all the claims pending in the application.

Objection to the drawings

Applicant submits that in view of the amendments made to claim 14, the drawings comply with the requirements under 37 C.F.R. § 1.83(a).

Claim rejections - 35 U.S.C. § 112

Claims 12-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14

In view of the amendments made to claim 14, Applicant submits that claim 14 complies with the requirements of 35 U.S.C. § 112.

Claim rejections - 35 U.S.C. § 102 (e)

Claims 12, 13, 15-18, 20, 22-24, 26, 27 and 29 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Fullerton et al. (US 6,937,667, hereafter “Fullerton”). Claim 28 is rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Richards et al. (US Publication No. 2002/0196845, hereafter “Richards”). Applicant traverses the rejections at least for the following reasons.

Independent claim 15

In rejecting claim 15, the Examiner alleges that Fullerton teaches all the limitations as recited in claim 15 of the present invention.

Claim 15 recites, *inter alia*, generating a reference template pulse sequence used to detect a start point of the received random-interval pulse sequence; generating reference pulse sequences of a signal 0 and a signal 1 based on the start point information regarding the random number sequence; and comparing the reference pulse sequences from the signal 0 and the signal 1 with the received random-interval pulse sequences and determining whether the value of the received random-interval pulse sequence is 0 or 1 based on the result of comparison.

The Examiner alleges that Fullerton teaches the step of generating a reference template pulse sequence (FIG. 18, template 1870 and column 23, line 50-column 24, line 45) and comparing the reference pulse sequences for the signal 0 and the signal 1 with the received random-interval pulse sequence and determining whether the value of the received random-interval pulse sequence is 0 or 1 based on the result of the comparison (column 27, line 52-column 28, line 17) as defined by claim 15 of the present invention. Applicant respectfully submits that the Examiner is misinterpreting the teachings of Fullerton at least for the following reasons.

Fullerton is directed to an impulse radio communication system that transmits and receives flip modulated impulse radio signals. Particularly, in the portions cited by the Examiner, Fullerton discloses a receiver that receives an impulse radio signal and a template signal, correlates the two signals and produces a baseband output signal 1814 (column 23, line 64-column 21, line 1). Furthermore, Fullerton discloses a precision timing generator 1860 that

utilizes a periodic timing signal generated by an adjustable time base 1856 and an optional code control signal generated by the optional code generator 1866 to generate a coded timing signal 1868. Moreover, the template signal generator 1870 uses the coded timing signal to produce a train of template signal pulses 1872 to be correlated with the received signal using the data correlator 1808 (column 24, lines 6-21).

In addition, Fullerton further discloses that the baseband output signal 1814 is separated into multiple signal paths and the polarity of the specific signal paths are reversed and compared to determine whether the received signal is a signal “0” or a signal “1” (column 25, line 57-column 26, line 9). Moreover, Fullerton teaches accumulating the signals on the multiple paths for a predetermined number of pulses and then comparing the accumulated values, if more than one pulse is used to represent each data state (column 26, lines 20-44). Furthermore, accumulated value may also be compared with a reference threshold value to determine the value of the received signal (column 27, line 63-column 28, line 5).

Applicant submits that Fullerton discloses generating a template signal and correlating a received signal with the template signal. However, Fullerton does not disclose generating a reference template pulse sequence used to detect a start point of the received random-interval pulse sequence and generating reference pulses sequences for a signal 0 and a signal 1 based on the start point information regarding the random number sequence.

Furthermore, Fullerton discloses comparing an output of two accumulators or comparing an output of an accumulator with a reference threshold value. However, Fullerton does not disclose comparing the reference pulse sequences for the signal 0 and the signal 1 with the received random-interval pulse sequence and determining whether the value of the received random-interval pulse sequence is 0 or 1 based on the result of comparison.

In view of the above, Applicant requests the Examiner to withdraw the rejection of claim 15.

Claims 16-20

Applicant submits that claims 16-20 depend from claim 15, and therefore should be allowable by virtue of their dependency.

Independent claim 22

Applicant submits that claim 22 recites subject matter analogous to claim 15, and therefore is also allowable at least for the same reasons claim 15 is allowable.

Claims 23 and 24

Claims 23 and 24 depend from claim 22, and therefore should be allowable by virtue of their dependency.

Independent claim 28

With regard to claim 28, the Examiner asserts that code source 812 (FIG. 8) of Richards corresponds to generating a first UWB pulse sequence using a predetermined random number sequence and pulse generator 822 (FIG. 8) corresponds to second generating a second UWB pulse sequence. Applicant respectfully disagrees.

For example, Richards teaches a code source 812 (FIG. 8) whose output is combined with a subcarrier signal to generate a modulated, coded timing signal (paragraph [0131]). Moreover, the modulated, coded timing signal is utilized as a trigger signal by a pulse generator 822 to generate output pulses (paragraph [0132]). However, there is no disclosure in Richards of

generating a first UWB pulse sequence using a predetermined random number sequence; and
generating a second UWB pulse sequence whose pulse width is wider than the pulse width of the first UWB pulse sequence by a predetermined degree. Therefore, Applicant requests the Examiner to withdraw the rejection, at least for the reasons given above.

Claim rejections - 35 U.S.C. § 103 (a)

Claims 1-4, 6-11, 21, 25, 28 and 30 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fullerton in view of Richards. Applicant traverses the rejections at least for the following reasons.

Independent claim 1

With regard to claim 1, the Examiner alleges that Fullerton teaches a random number generator, a random-interval pulse sequence generator, a template pulse sequence generator and a comparator as defined by claim 1 of the present invention. However, the Examiner admits that Fullerton fails to explicitly show whether the template pulse generator generates pulse sequences for a signal 0 and signal 1 by changing widths of pulses, but asserts that Richards discloses a template pulse generator that generates pulse sequences for a signal 0 and 1 by changing widths of pulses (paragraph [0144]). Applicant traverses the rejection at least for the following reasons.

Applicant submits that claim 1 recites, *inter alia*, “a template pulse sequence generator which generates a reference template pulse sequence used to detect the start point of the random-interval pulse sequence and generates pulse sequences for a signal 0 and a signal 1; and a comparator which compares the pulse sequences for the signal 0 and the signal 1 based on the start point information regarding the random number sequence with the received random-interval

pulse sequence, and determines whether the value of the received random-interval pulse sequence is 0 or 1.”

The subject matter of claim 1 noted above is analogous to the subject matter of claim 15, and therefore Fullerton does not teach all the limitations of claim 1, at least for the reason noted above with respect to claim 15.

Furthermore, with regard to the Examiner’s assertion that Richards teaches the admitted deficiency of Fullerton, Applicant respectfully disagrees. For instance, in the portion cited by the Examiner, Richards merely mentions that pulse width is one of the pulse characteristics that can be defined in accordance with a layout in the impulse communication (paragraph [0144]) and does not **disclose a template pulse generator that generates pulse sequences for a signal 0 and 1 by changing widths of pulses.**

In view of the above, we would request the Examiner to withdraw the rejection of claim 1 at least of the reasons given above.

Claims 2-7

Claims 2-7 depend from claim 1, and therefore, should be allowable by virtue of their dependency.

Independent claim 8

Applicant submits that claim 8 recites subject matter analogous to claim 1, and therefore is also allowable for at least the same reasons claim 1 is allowable.

Claims 9-11

Claims 9-11 depend from claim 8, and therefore, should be allowable by virtue of their dependency.

Claim 21

Applicant submits that since claim 21 depends from claim 15 and since Richard does not cure the deficient teachings of Fullerton noted above with respect to claim 15, claim 21 should be allowable by virtue of its dependency on claim 15.

Claim 25

Applicant submits that since claim 25 depends from claim 22 and since Richard does not cure the deficient teachings of Fullerton noted above with respect to claim 15, claim 25 should be allowable by virtue of its dependency on claim 22.

Independent claim 28

With regard to claim 28, the Examiner admits that Fullerton does not teach whether the second pulse has pulse width that is wider than the pulse width of the first UWB pulse sequence by a predetermined degree. However, the Examiner asserts that Richards cures the deficiency of Fullerton. Applicant respectfully disagrees.

Applicant submits that in paragraphs [0099]-[0103], Richards discloses time-shift modulation in which the position of the pulse is either shift forward or backward in time relative to a nominal coded time position (paragraph [0100]). However, Richards does not disclose generating a second UWB pulse sequence whose **pulse width is wider than the pulse width of the first UWB pulse sequence by a predetermined degree.**

Therefore, Applicant respectfully requests the Examiner to withdraw the rejection of claim 28, at least for the reasons given above.

Independent claims 14 and 30

Applicant submits that claims 14 and 30 recite subject matter analogous to claim 28 and therefore should be allowable for the same reason claim 28 is allowable.

New claims

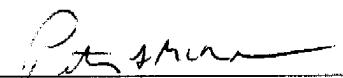
Claims 31-34 depend from one of the independent claims (1 or 8), therefore are allowable by virtue of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


Peter A. McKenna
Registration No. 38,551

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
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CUSTOMER NUMBER

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